

Appl. No. 09/645,593
Amdt. Dated October 21, 2003
Reply to Office action of May 21, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method for the expression of a nucleic acid sequence of interest in flax seeds comprising:

(a) preparing a chimeric nucleic acid construct comprising in the 5' to 3' direction of transcription as operably linked components:

(1) a seed-preferred promoter obtained from flax wherein said seed-preferred promoter comprises:

(i) a nucleic acid sequence as shown in Figure 4 (SEQ.ID.NO.:8) wherein T can also be U;

(ii) a nucleic acid sequence that is complementary to the nucleic acid sequence of (i); or

(iii) a nucleic acid sequence that hybridizes to the nucleic acid sequence of (i) or (ii) under stringent hybridization conditions, wherein said conditions comprise hybridizing in 6.0 x sodium chloride/sodium citrate (SSC) at about 45°C followed by a wash of 2.0 x SSC at 50°C; and

(2) said nucleic acid sequence of interest wherein said nucleic acid of interest is non-native to said seed-preferred promoter;

(b) introducing said chimeric nucleic acid construct into a flax plant cell; and

(c) growing said flax plant cell into a mature flax plant capable of setting seed wherein said nucleic acid sequence of interest is expressed in the seed under the control of said seed-preferred promoter.

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Claim 2 (currently amended): The method according to claim 1 wherein at least one expression characteristic conferred by said seed-preferred promoter to its native nucleic acid sequence is conferred to said non-native nucleic acid sequence, wherein said expression characteristic is timing of expression, level of expression, response to a change in lighting conditions, response to a change in temperature, response to a change in concentration of a chemical agent.

Claims 3-5 (deleted).

Claim 6 (original): The method according to claim 1 wherein expression of said nucleic acid sequence of interest results in an alteration in protein or fatty acid composition in said seed.

Claim 7 (currently amended): Transgenic flax seed prepared according to a method comprising:

(a) preparing a chimeric nucleic acid construct comprising in the 5' to 3' direction of transcription as operably linked components:

(1) a seed-preferred promoter obtained from flax wherein said seed-preferred promoter comprises:

(i) a nucleic acid sequence as shown in Figure 4 (SEQ.ID.NO.:8) wherein T can also be U;

(ii) a nucleic acid sequence that is complementary to the nucleic acid sequence of (i); or

(iii) a nucleic acid sequence that hybridizes to the nucleic acid sequence of (i) or (ii) under stringent hybridization conditions, wherein said conditions comprise hybridizing in 6.0 x sodium chloride/sodium citrate (SSC) at about 45°C followed by a wash of 2.0 x SSC at 50°C; and

(2) a nucleic acid sequence of interest wherein said nucleic acid of interest is non-native to said seed-preferred promoter;

(b) Introducing said chimeric nucleic acid construct into a flax plant cell; and

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(c) growing said flax plant cell into a mature flax plant capable of setting seed wherein said nucleic acid sequence of interest is expressed in the seed under the control of said seed-preferred promoter.

Claim 8 (currently amended): Transgenic flax seed according to claim 7 wherein at least one expression characteristic conferred by said seed-preferred promoter to its native nucleic acid sequence is conferred to said non-native nucleic acid sequence, wherein said expression characteristic is timing of expression or level of expression.

Claims 9-11 (deleted).

Claim 12 (original): Transgenic flax seed according to claim 8 wherein expression of said non-native gene of interest results in an alteration in the seed protein or fatty acid composition.

Claim 13 (currently amended): Transgenic flax plants capable of setting seed prepared by a method a method comprising:

(a) preparing a chimeric nucleic acid construct comprising in the 5' to 3' direction of transcription as operably linked components:

(1) a seed-preferred promoter obtained from flax wherein said seed-preferred promoter comprises:

(i) a nucleic acid sequence as shown in Figure 4 (SEQ.ID.NO.:8) wherein T can also be U;

(ii) a nucleic acid sequence that is complementary to the nucleic acid sequence of (i); or

(iii) a nucleic acid sequence that hybridizes to the nucleic acid sequence of (i) or (ii) under stringent hybridization conditions, wherein said conditions comprise hybridizing in 6.0 x sodium chloride/sodium citrate (SSC) at about 45°C followed by a wash of 2.0 x SSC at 50°C; and

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(2) a nucleic acid sequence of interest wherein said nucleic acid of interest is non-native to said seed-preferred promoter;

(b) introducing said chimeric nucleic acid construct into a flax plant cell; and

(c) growing said flax plant cell into a mature flax plant capable of setting seed wherein said nucleic acid sequence of interest is expressed in the seed under the control of said seed-preferred promoter.

Claim 14 (currently amended) An isolated nucleic acid molecule capable of directing seed-preferred expression in a plant comprising:

(a) the a nucleic acid sequence as shown in Figure 4 (SEQ.ID.NO.:8) wherein T can also be U;

(b) the a nucleic acid sequence that is complementary to the nucleic acid sequence of (a);

~~— (c) — a nucleic acid sequence that has substantial sequence homology to the nucleic acid sequence of (a) or (b); or~~

~~— (d) — a nucleic acid sequence that is an analog of the nucleic acid sequence of (a), (b) or (c); or~~

(e) (c) a nucleic acid sequence that hybridizes to the nucleic acid sequence of (a), ~~or (b), (c) or (d)~~ under stringent hybridization conditions, wherein said conditions comprise hybridizing in 6.0 x sodium chloride/sodium citrate (SSC) at about 45°C followed by a wash of 2.0 x SSC at 50°C.

Claim 15 (currently amended) An isolated chimeric nucleic acid molecule comprising:

(a) a first nucleic acid sequence comprising a seed-preferred promoter obtained from flax which comprises:

(1) the a nucleic acid sequence as shown in Figure 4 (SEQ.ID.NO.:8) wherein T can also be U;

(2) a nucleic acid sequence that hybridizes to the nucleic acid sequence of (a)(1) under stringent hybridization conditions; or wherein said conditions

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comprise hybridizing in 6.0 x sodium chloride/sodium citrate (SSC) at about 45°C followed by a wash of 2.0 x SSC at 50°C;

(3) a nucleic acid sequence that is complementary to the nucleic acid sequence of (a)(1) or (a)(2); or

~~_____ (4) a nucleic acid sequence that has substantial sequence homology to the nucleic acid sequence of (a)(1); (a)(2) or (a)(3); and~~

(b) a second nucleic acid sequence non-native to said flax seed-preferred promoter.

Claim 16 (previously amended) A method for the expression of a nucleic acid sequence of interest in a plant seed comprising:

(a) introducing the chimeric nucleic acid molecule according to claim 15 into a plant cell; and

(b) growing said plant cell into a mature plant capable of setting seed, wherein the second nucleic acid sequence is expressed in the seed under the control of the seed-preferred promoter.

Claim 17 (original): A method according to claim 16 wherein said plant cell is selected from the group of plants consisting of soybean (*Glycine max*), rapeseed (*Brassica napus*, *Brassica campestris*), sunflower (*Helianthus annuus*), cotton (*Gossypium hirsutum*), corn (*Zea mays*), tobacco (*Nicotiana tabacum*), alfalfa (*Medicago sativa*), wheat (*Triticum sp.*), barley (*Hordeum vulgare*), oats (*Avena sativa L.*), sorghum (*Sorghum bicolor*), Arabidopsis thaliana, potato (*Solanum sp.*), flax/linseed (*Linum usitatissimum*), safflower (*Carthamus tinctorius*), oil palm (*Eleais guineensis*), groundnut (*Arachis hypogaea*), Brazil nut (*Bertholletia excelsa*) coconut (*Cocos nucifera*), castor (*Ricinus communis*), coriander (*Coriandrum sativum*), squash (*Cucurbita maxima*), jojoba (*Simmondsia chinensis*) and rice (*Oryza sativa*).

Claim 18 (original): A plant prepared according to the method of claim 16.

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Claim 19 (original): A plant cell comprising the chimeric nucleic acid sequence according to claim 15.

Claim 20 (original): Plant seed comprising the chimeric nucleic acid sequence according to claim 15.

Claim 21 (original): Plant seed obtained from a plant prepared according to the method of claim 16.

Claim 22 (previously amended): A recombinant expression vector comprising the nucleic acid sequence according to claim 14.

Claim 23 (previously amended): A recombinant expression vector comprising the nucleic acid sequence according to claim 15.